

ABSTRACT OF THE DISCLOSURE

In a system, a frequency-modulating unit is configured to frequency-modulate a radar wave signal within a predetermined frequency modulation range from bottom to top so that a frequency of the frequency-modulated radar wave changes in time. The rate of frequency change of the radar wave signal in time is set to F_0/T_f . The F_0 represents a center frequency in the frequency modulation range. The T_f represents the predetermined constant time. A mixing unit is configured to mix the transmitted frequency-modulated radar wave signal and the reflection signal to obtain a beat signal. The beat signal is based on a frequency difference between a frequency of the transmitted radar wave signal and that of the reflection signal. A sweeping unit is configured to sweep the beat signal within the frequency modulation range from one of the bottom and the top to the other thereof to obtain a frequency component of the beat signal. An obtaining unit is configured to obtain the prediction distance based on a relationship between the frequency component of the beat signal and the prediction distance.